Amendments to the Drawings:

The attached sheet of drawings includes corrected drawings for Figs. 1 and 2. These sheets, which includes Figs. 1-2, replace the original sheets including Fig. 1-2. In Figure 2, previously omitted element 270b has been added.

Attachment: Replacement Sheet

REMARKS

Claims 13-16 have been withdrawn, claims 17 and 22 have been amended, and claims 24-30 have been added.

Amendments to the Drawings

Figure 1 has been amended to include the designation "Prior Art."
Figure 2 has been amended to include the reference number 270b.

Amendments to the Specification

The specification has been amended to include the reference number 240.
The title of the invention has been has been amended to "PRINT HEAD WITH TEMPERATURE CONTROL."

Claim Amendments

Claim 17 has been amended to provide that the print elements comprise ink jet valves. Support for this amendment if found throughout the application, e.g. paragraphs [0001], [0010], and [0013].

Claims 22 have been amended to correct grammatical issues and provide that the print elements are arranged in a two-dimensional array. Support for this amendment is found in paragraphs [0010], [0013], and Figure 2.

Claims 24 to 30 have been added. No new matter has been added. Claim 24 provides that the print elements are arranged in a two-dimensional array. Support for this amendment is found in paragraphs [0010], [0013], and Figure 2. Claims 25 and 28 provide that the valves are electromagnetic valves. Support for this amendment is found in paragraph [0011]. Claims 26 and 29 provide a drop-on demand printer incorporating the print head. Support for this amendment is found in paragraph [0011]. Claims 27 and 30 provide a printer operating at speeds in excess of 1 kHz. Support for this amendment is found in paragraph [0011].

Objections to the Drawings

Figures 1 and 2 have been rejected. Figure 1 has been amended to include the designation "Prior Art." The specification has been amended to include the reference number 240. Figure 2 has been amended to include the reference number 270b. The temperature means and temperature controller are indicated by reference number 240 in the amended specification.

Applicant requests that the drawing objections be withdrawn.

Objections to the Specification

The title of the invention has been has been amended to "PRINT HEAD WITH TEMPERATURE CONTROL." Applicant requests that the drawing objection be withdrawn.

Claim Objections

Claim 22 stand objected to. Claim 22 has been amended to correct the dependency. Applicant requests that the objection be withdrawn.

Claim Rejections

A. Anticipation Rejections

Claims 17, 18, and 21 stand rejected under 35 U.S.C. § 102(b) as anticipated by Nakata. Claim 17 has been amended to provide that the print elements comprise ink jet valves. As noted in the present application, high speed printing with electromagnetic valves generates significant amounts of heat. See paragraph [0001]. The claimed invention is directed at providing, inter alia, a cooling system to regulate the temperature of a print head including ink jet valves. Nakata does not disclose or suggest a temperature regulation system for a print head with ink jet valves. Nakata is directed to a bubble jet printer, where the ink is ejected by using heat to generate bubble to eject the ink from a head. See col. 1, lines 38-50; col. 8, lines 22-33. In contrast, claim 17 provides that the print elements include ink jet valves. Nakata does not disclose or suggest

anything about ink jet valves. Applicants request that the rejection of claim 17, and the dependent claims thereof, be withdrawn.

B. Obviousness Rejections

Claims 19, 22, and 23 stand rejected under 35 U.S.C. § 103(a), as unpatentable over Nakata in view of Hirosawa. Regarding claim 19, which depends from claim 17, Hirosawa is directed to thermal inkjet printing (see col. 4, lines 1-25) and does not mention ink jet valves as print elements. Therefore, Hirosawa does not correct the deficiencies of Nakata, and claim 19 is not obvious for the same reasons described above with respect to claim 17.

Claim 22 has been amended to provide that the print elements are arranged in a two-dimensional array. Neither Nakata or Hirosawa disclose or suggests a two-dimensional array of print elements with a cooling system. At best, Nakata or Hirosawa merely show a line of print elements. As seen in Figure 2, a two-dimensional array of print elements is very different from the thermal ink jet print elements shown in Nakata and Hirosawa. Applicants request that the rejection of claims 22 and 23 be withdrawn.

Claim 20 stands rejected under 35 U.S.C. § 103(a), as unpatentable over Nakata in view of Kao. As described above for claim 17, Nakata does not disclose or suggest a discharge a temperature regulation systems for ink jet valves. Likewise, Kao is directed to thermal inkjet printing (see col. 2, lines 12-33) and does not mention ink jet valves as print elements. Therefore, Kao does not correct the deficiencies of Nakata, and claim 20 is not obvious for the same reasons described above with respect to claim 17. Applicants request that the rejection be withdrawn.

New claim 24 provides that the print elements are arranged in a two-dimensional array. As described above for claim 22, the cited references do not disclose or suggests a two-dimensional array of print elements with a cooling system.

New claims 25 and 28 provide that the print elements include electromagnetic valves. As described above, all the cited references are directed to thermal ink jet technology and do not use electromagnetic valves as part of the print elements.

New claims 26 and 29 provide a drop-on demand printer incorporating the print head. None of the cited references are directed to drop-on-demand printers in combination with the other claim elements.

New claims 27 and 30 provide a printer operating at speeds in excess of 1 kHz. None of the cited references disclose the use of a cooling system with a printer operating at speeds in excess of 1 kHz

Therefore, new claims 24-30 are allowable for these additional reasons, besides the reasons described above with respect to the independent claims.

Conclusion

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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